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AN IMPROVED BOX TRAP FOR SMALL GAME AND FUR ANIMALS

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The new aluminum-framed box trap described in this leaflet was designed to overcome many of the disadvantages of older wood-framed traps. It has performed well in field tests and is recommended for use in live-trapping animals ranging in size from squirrel to raccoon. Its design is based on the wood and hardware-cloth trap developed at the Swan Creek and Rose Lake Wildlife Experiment Stations in Michigan. The Michigan trap is illustrated and described briefly by Allen.[1/] Tests of the new trap were made in comparison with this model. Both owe their basic pattern to an older wooden trap.[2/]

Advantages of the new design

(1) Resistance to accidental springing. All mechanism is inside the trap. The 1/2" mesh size keeps animals from reaching in from the outside.

(2) Resistance to jamming. The treadle slants up toward the front instead of toward the rear, so the trap cannot be put out of order by mice working kernels of bait corn under the treadle. As additional assurance, a special spring at the rear holds the bait off the floor. The metal frame prevents the warping that often causes jamming of wooden traps in wet weather.

(3) Increased efficiency in capturing raccoons. The trap length was extended to 30" from 24" and the treadle was set close to the back. Additional length prevents raccoons from springing the traps before they are completely inside. They cannot reach in, take the bait, and back out again, as often happens with shorter traps. Traps for rabbits or squirrels could be made shorter, and would be easier to handle.

(4) Better protection of trapped animals. In some traps, the released trip rod springs forward with such force when the trap is sprung that the entering animal is injured; some have had ruptured eyeballs. In the new trap the trip mechanism is placed overhead along one side and moves backward when sprung, so the animal is not hit. The trap is also strong enough to protect captured animals from attack by dogs. Trapped animals can be protected from sun, rain, or snow by covering the traps, without danger of the covering disturbing the mechanism.

(5) Ease of handling and maintenance. Weight is 13 lbs., about two-thirds as much as a wood-framed trap of the same size. The trap is nevertheless sturdy enough to support the weight of a man, and strong enough to prevent internal damage by trapped animals or external damage by predators seeking the trapped animals. The traps can be stacked to be carried from place to place because all mechanism is inside. The trip spring is at the front of the trap, out of the way of possibly corrosive baits and in a position for easy replacement. If the mesh part of the trap is damaged, the frame can be unbolted and re-used with new mesh. Metal tubular handle and metal frame avoid splinter problems in handling. Treadle lightness can be regulated by unbolting the side fixture and moving it up or down to alter the leverage on the vertical rod. The trap is resistant to weather damage since aluminum, galvanized steel, and copper or brass are the only materials used.

1/ Allen, Durward L. Michigan fox squirrel management. Mich. Dept. Cons. 404 p., illus. Oct. 1943. [p. 80]

2/ Silver, James, and Frank N. Jarvis. How to make a cat trap. U. S. Dept. Agr. Biol Surv. Leafl. 50. 4 p., 1 fig. Nov. 1929.

Field tests

The trap was tested at the Patuxent Research Refuge in Maryland. During a full year's trial of 60 of the new traps, none failed to function and, except once after a heavy snow, none was sprung without catching an animal. Wood-framed, 24" traps were often sprung several days in a row without making a catch. Several times substitution of one of the new traps resulted in capture of a raccoon. Once a series of squirrel captures followed replacement of an often-sprung wooden trap by one of the new traps. After a light snow, raccoon tracks were followed to first one and then another sprung trap of the older type and finally to a new-style trap, in which the raccoon was caught. In one test, a line of 160 traps was set, with new and old traps alternating. The catch was appreciably higher in the new traps. None of the new traps was sprung without catching an animal. Fewer of the old traps were sprung than usual, apparently because animals were caught in the first new-style traps they encountered; a single raccoon could not go down the line springing one trap after the other.

Construction of the trap

The trap can be made with the standard equipment of any sheet-metal shop. Instructions below, used with the diagram on p. 4, will help in assembling the trap.

(1) The frame of the trap is assembled first. Prepare door frame parts: Cut a 48-3/8" piece of 1" x 1/16" aluminum angle. Miter on one side at 19" from each end and bend at right angles to form the two sides and bottom of frame. Cut a 48-1/8" piece of 3/4" x 1/16" aluminum angle; miter and bend it to fit neatly inside the 1" angle and leave a 3/16" space for the sliding door. Cut a 12-5/8" piece of 1" angle for the crosspiece; from each end cut away one side of the angle for a length of 1-1/4"; bend down the other half at right angles so the crosspiece will fit between uprights of frame. For the handle, flatten an inch at each end of the 12-1/8" piece of aluminum tubing and bend flattened parts to fit between uprights. Drill bolt holes through all pieces in positions shown in diagram.

(2) Prepare mesh part of trap: Fold 44" piece of 1/2" #14 hardware cloth to form box 11" on each side and 10" on top and bottom. Allow a 2" overlap on bottom, with the short section on the outside. Connect overlapping sections by wiring along both free edges.

(3) Prepare the rod support: Bend a rounded groove about 5/16" diameter into the center of the 3/4" x 2" piece of sheet metal. Spotweld this piece, by its ends, to center of edge of 2" x 6" piece of sheet metal. Bend at right angle 1-1/4" of one end of 2" x 6" piece to fit inside top of door frame.

(4) Assemble frame: Place one end of hardware-cloth frame inside elements of door frame. Put crosspiece between uprights and outside hardware cloth. Put rod support inside trap under left side of crosspiece, with groove of rod support running from front to rear. Drill two holes in the 2" x 6" piece to match those on door frame. Bolt all together as shown in diagram. Bolt handle in place.

(5) Next prepare and assemble the trip mechanism. For treadle, cut a 5" x 10" piece of sheet metal. Fold over and flatten 1/2" on each end and one side. For the hinged side of the treadle, fold 1/2" of the remaining side tightly over the 13" #9 galvanized wire. Bend each end of wire inward about 1-1/8" in plane of treadle, to form long, narrow, nearly closed loops; length of rod should then be about 1/2" greater than width of trap.

(6) For adjustable brackets, cut two 1-1/4" pieces from 1" aluminum angle (shown as galvanized-steel brackets of slightly different size in diagram). On one side of each, drill two holes for bolts. On other side of each, drill a 3/8" hole in center, 1/2" from edge, for rod to pass through.

(7) For the main trip rod, use the 32" x 3/16" brass rod. In one end make an overlapping loop of about 1/4" inside diameter. Place rod on flat surface with loop lying flat. Make a right angle upward bend in the rod 20" from the far end of the loop; 2-1/2" from the first bend, make another right angle bend in the opposite direction, but in same plane. For the secondary trip rod, use the 12" piece of 3/16" rod; fold over about 1" at the end to make a loop.

(8) Assemble trip mechanism as shown in diagram: Fasten treadle about 3" from rear of trap and 1-1/2" from floor; slip one loop of treadle rod over a vertical wire of hardware cloth; let other loop pass through hardware cloth on other side and anchor it with a separate loop of wire. Run main trip rod through holes in the brackets. Bolt brackets to sides of trap, using 2 washers, one large and one small, on each bolt; front bracket should be about 3" from top of trap and 9" from front; rear bracket should be about 3-1/2" from bottom of trap and 7-1/2" from back. Front end of trip rod should run forward along the top of the trap from the front bracket, through the groove in the rod support, and through a 3/8" hole in the crosspiece, drilled in the proper position to receive it. Hook the looped end of the 12" trip rod through the mesh at top of trap about 5" from rear and run the straight end through the loop in the long trip rod. Place spring inside copper tubing. Attach one end of spring to upper elbow of long trip rod. Attach other end of spring to mesh of trap near side of top, about 14-1/2" from front of trap. Attach in such a position that there is no tension on spring when trap is not set. Wire the tubing to the trap. The spring will extend from the tube when the trap is set. As the spring extends it should move parallel to the top of the trap; an angular pull may produce binding on the trip rod. Some adjustment in positions of brackets and vertical rod may be necessary to get correct tension and operation. To set trap, raise front edge of treadle to about horizontal and pull lower end of vertical trip rod forward to engage it by friction. Long trip rod should then protrude through crosspiece enough to hold up door.

(9) For the door, cut a 10" x 11" piece of 18-gauge sheet metal and round corners slightly. For the door lift, cut a 1" x 2" piece of sheet metal; round corners; bend at right angles across middle and spotweld to center of door top. For the back, cut a 10" x 11" piece of hardware cloth, cutting close to the crossmesh to eliminate projecting wires. Wire to body of trap. For the bait holder, hook the spring to the mesh of the trap at the rear, as shown in diagram.

(10) In all construction, round edges or corners and make sure tying wires do not project in a way to injure captive animals or operator.

List of materials

1" x 1" x 1/16" aluminum angle: pieces 48-3/8", 12-5/8", 1-1/4", 1-1/4"
3/4" x 3/4" x 1/16" aluminum angle: 48-1/8"
1/2" aluminum tubing: 12-1/8"
3/4" x 3/16" aluminum stove bolts (No. 5 RHMS): 16
3/16" aluminum washers: 16
5/16" aluminum washers: 4
14-gauge, 1/2" mesh hardware cloth: 44" x 30" piece, 10" x 11" piece
18-gauge galvanized sheet metal, flat stock: 10" x 11" piece
26-gauge galvanized sheet metal: pieces: 5" x 10", 2" x 6", 3/4" x 2", 1" x 2"
1/8" galvanized steel rod (No. 9 wire): 13"
3/16" brass welding rod: 32" piece, 12" piece
3/4" brass or unannealed copper tubing: 5-1/2" piece
14-gauge galvanized wire: about 8 feet
2 coil springs as specified: .0348" M.B.H.D. wire; O.D. 25/64"; length C.P. 3-9/32" approx.; 4" inside loops; total coils 98; active coils 96 approx.; ends machine loops; finish heat treat and cadmium plate.

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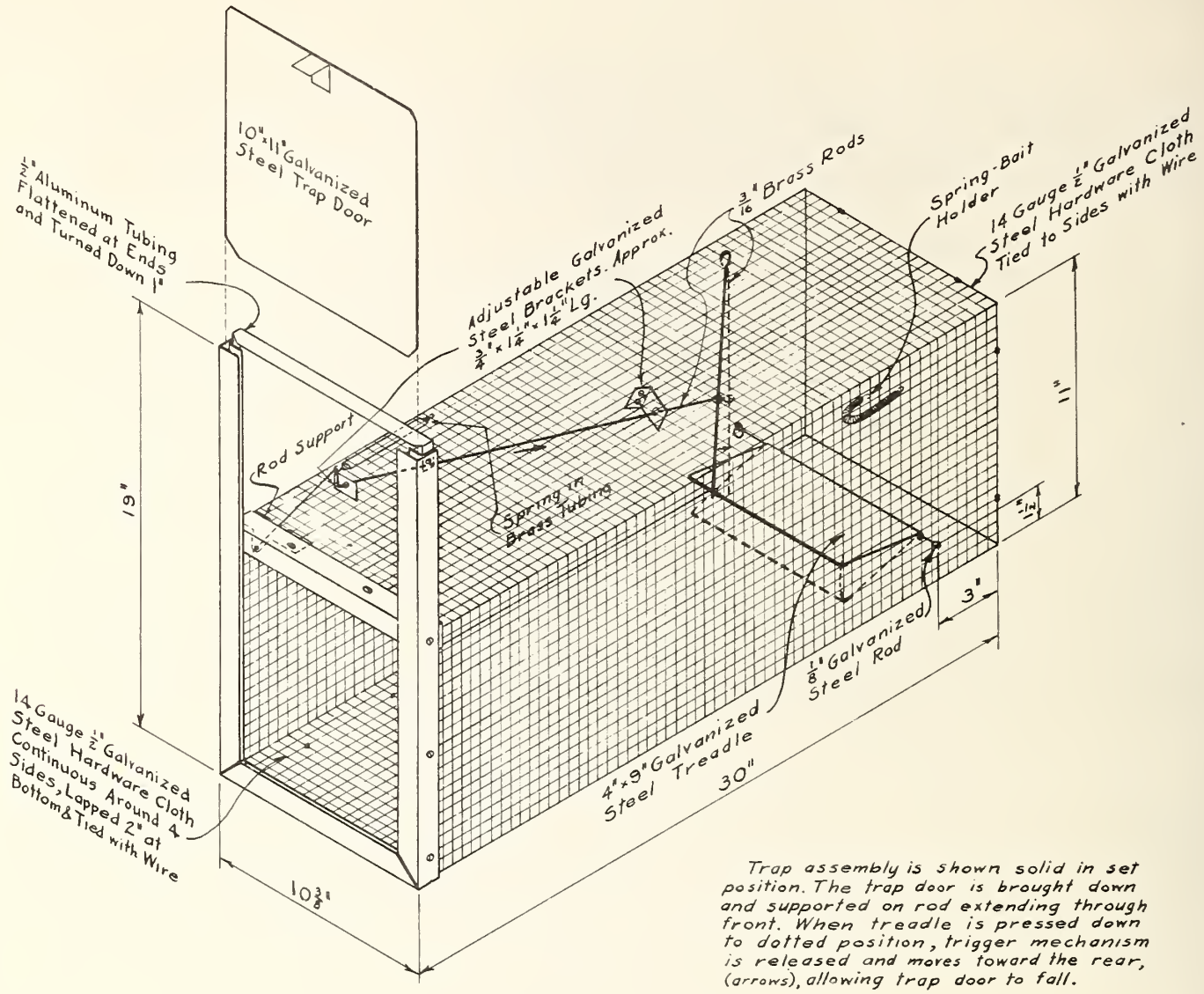
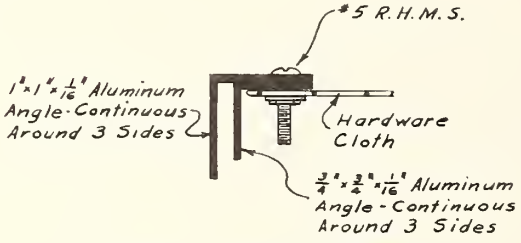
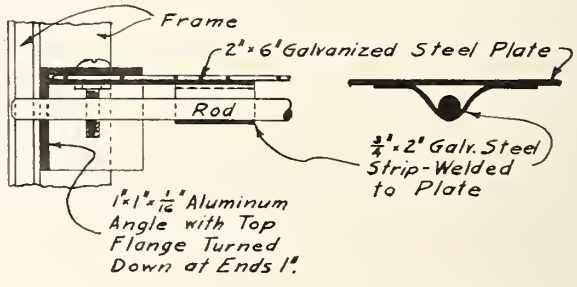


Trap assembly is shown solid in set position. The trap door is brought down and supported on rod extending through front. When treadle is pressed down to dotted position, trigger mechanism is released and moves toward the rear, (arrows), allowing trap door to fall.



TYPICAL FRAME DETAIL



ROD SUPPORT DETAIL

LIGHT-WEIGHT BOX TRAP